

### **ABSTRACT OF THE DISCLOSURE**

An optical system for use in projection based displays includes a plurality of solid state light sources associated with a plurality of total internal reflection based compound hyperbolic emitters, a graduated dichroic filter based device for homogenizing light output from the plurality of solid state light sources, a ferro-electric liquid crystal on silicon device for illumination with light output from the array of solid state light sources, and a polarization diffuser for homogenization of light at the ferro-electric liquid crystal on silicon device, wherein the polarization diffuser is positioned at a point in space, in the optical system, where the size of a beam of light transmitted from the graduated dichroic filter based device is substantially at a maximum.